UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,073	08/18/2003	Dehao Zhu	D5407-200	4624

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DUANE, MORRIS, LLP
3200 SOUTHWEST FREEWAY
Suite 3150
HOUSTON, TX 77027

EXAMINER
TSAI, CAROL S W

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/644,073	ZHU ET AL.
	Examiner	Art Unit	
	Carol S Tsai	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _18 August 2003_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-19_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _1-16_ is/are allowed.

6)☒ Claim(s) _17-19_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
    application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _8/18/2003_.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 17-19 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S.

Patent No. 5,862,513 to Mezzatesta et al.

Mezzatesta et al. disclose a system for modeling behavior of a well logging tool

for an earth formation, comprising: a) a computer (see Abstract, lines 8-9); b) a data store

operatively in communication with the computer (see col. 7, lines 44-50); c) a training

data set comprising data stored in the data store, the training data set related to behavior

of a well logging tool for an earth formation (see col. 4, lines 9-16 and col. 7, lines 31-

43); d) a source of measured data for the well logging tool for an earth formation

operatively in communication with the computer, data from the source of measured data

being storable in the data store (see col. 7, lines 44-53); e) and a neural network model of

the well logging tool for an earth formation, the neural network resident in the computer,

the neural network able to utilize the training data set and measured data to manipulate a

model of the well logging tool for an earth formation (see col. 7, line 53 to col. 8, line 2).

Mezzatesta et al.

Mezzatesta et al. do not disclose expressly an electric submersible pump

application, but it is considered inherent, because the artificial lift systems including sub

surface gas lift, beam pumps, progressive cavity pump and submersible pumps are

controlled in response to a known liquid level within the well bore in order to prevent the

well from pumping off and damaging the artificial lift system or from reducing the liquid

level in the well bore to an unnecessarily low level to thereby increase the energy

required by the artificial lift system to remove the liquid from the well bore.

As to claims 18 and 19, Mezzatesta et al. do not disclose expressly a self-adapable

neural network.

It is, however, considered inherent that Mezzatesta et al. includes a self-adapable

neural network (see col. 2, lines 12-14), because physical neural network, including

artificial synapses can adapt itself.

Allowable Subject Matter

1.   Claims 1-16 are allowed.

2.   The following is a statement of reasons for the indication of allowable subject

matter:

U. S. Patent No. 5,862,513 to Mezzatesta et al. is the reference closest to the

claimed invention. Mezzatesta et al. disclose a method for producing synthetic tool

responses for a well logging tool for earth formation parameters, comprising the steps of:

a) acquiring an initial set of data for a number of points or areas in a formation using a

wellbore logging tool; b) producing a set of models or "training set" for the formation

based on the original set of wellbore logging data for a single or multi-layer formation; c)

introducing an earth model or "input model" from the training set to an artificial neural

network (ANN) to produce an output of predictive synthetic tool responses for a

particular well logging tool; d) comparing the output synthetic responses to theoretical responses and/or actual responses associated with the particular initial earth model to determine the amount of mismatch; e) and repeatedly comparing the output to the associated tool responses for the particular input model until an acceptable trained ANN is obtained. However, Mezzatesta et al. do not teach a method of predicting behavior of a characteristic of an electric submersible pump application, comprising: a) generating a training data set comprising data representative of an electric submersible pump application, the data related to at least one predetermined characteristic of the electric submersible pump application; b) establishing an initial neural network model for the electric submersible pump application, the neural network model related to the at least one predetermined characteristic of the electric submersible pump application; c) using the training data set by the initial neural network to create a predictive model of behavior of the at least one predetermined characteristic of the electric submersible pump application; d) obtaining measured electrical submersible pump application operational data; and e) adapting the neural network using the measured electrical submersible pump application operational data to create a predictive model of behavior of the at least one predetermined characteristic of the electric submersible pump application; and including all of the other limitations in the respective independent claims.

Conclusion

3.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

     Hogan et al. disclose a system and method for predicting a specific aspect, such as

run life, of a component or system.

Soergel et al. dislcose an automation system for the erection and operation of industrial plants, in particular for the design, project engineering, implementation, commissioning, maintenance and optimization of individual plant components or complete plants in the basic materials industry, which plants have a computer-based control system which, for a description of the process in control engineering terms, has recourse to process models, for example in he form of mathematical/physical models, neural network models or knowledge-based system, in order to develop the system to the extent that straightforward and cost-effective decentral process management and optimization may be achieved remote from the plant, decentralized process management and optimization by means of one or more interlinked control points is proposed, process changes are continuously monitored online or offline or at least checked by modelling, using modern, public communication means, and the process models, parameters and software are adaptable specifically to the plant.

Vilim et al. disclose an apparatus and method for monitoring a process involving development and application of a statistically qualified neuro-analytic (SQNA) model to accurately and reliably identify process change.

Samaroo discloses an improved apparatus and improved method for determining the characteristics of a multi-phase fluid along a well hole having a predefined geometric profile are presented.

Rnes et al. disclose a fault diagnostics system for monitoring the operating condition of a host system, e.g., an aircraft, which includes a plurality of subsystems.

Contact Information

4.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Carol S. W. Tsai whose telephone number is (571) 272-

2224. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00

PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Marc S. Hoff can be reached on (571) 272-2216. The fax number for TC

2800 is (703) 872-9306. Any inquiry of a general nature or relating to the status of this

application or proceeding should be directed to the TC 2800 receptionist whose telephone

number is (571) 272-1585 or (571) 272-2800.

        In order to reduce pendency and avoid potential delays, Group 2800 is

encouraging FAXing of responses to Office actions directly into the Group at (703) 872-

9306. This practice may be used for filing papers not requiring a fee. It may also be used

for filing papers which require a fee by applicants who authorize charges to a PTO

deposit account. Please identify the examiner and art unit at the top of your cover sheet.

Papers submitted via FAX into Group 2800 will be promptly forwarded to the examiner.

Carol S. W. Tsai
Patent Examiner
Art Unit 2857

12/07/04